

Glossary

Note: Although an attempt has been made to conform to proper usage of technical terms, many of the words and phrases defined below are terms of art with meanings specific to the watershed analysis process. Sources of the definitions are not cited, except for terms defined in the Forest Practices Rules, WAC 222: Chapter 16, General Definitions, and Chapter 22, Watershed Analysis.

channel-forming discharge. Streamflow of magnitude sufficient to mobilize significant amounts of bed sediments.

channel indicator. Characteristic of streambed, banks, and floodplains used to interpret the effects of changes in sediment, water, or wood.

channel sensitivity. Capacity to respond to physical disturbance.

CMER. Cooperative, Monitoring, Evaluation and Research Committee established by the Timber/Fish/Wildlife Agreement.

critical question. Fundamental question, based on scientific process considerations, addressed in one of the modules of this manual.

cumulative effects. Changes to the environment caused by the interaction of natural ecosystem processes with the effect(s) of two or more forest practices (WAC 222-16-010).

dam-break flood. Downstream surge of water caused by the sudden breaching of an impoundment in a stream channel; a form of debris torrent. The rapid failure of the dam (formed by a landslide, the deposit of a debris flow, or a debris jam) can cause a flood up to two orders of magnitude larger than normal storm-runoff floods. These extreme hyperconcentrated (water > sediment) floods can occur in 1st- through 6th-order valleys, in both natural and managed landscapes.

debris flow. Highly mobile slurry of soil, rock, vegetation, and water that can travel many miles down steep (>5°) confined mountain channels; a form of debris torrent. While generally occurring in colluvium-filled 1st- and 2nd-order streams, debris flows can deposit sediment in streams of any order, typically at tributary junctions.

debris torrent. Debris flow or dam-break (or other hyperconcentrated) flood, undifferentiated. The effects of debris flows and dam-break floods can appear superficially similar (particularly on air-photos), although the two processes differ in initiation, composition, and travel characteristics. This term is used when it is not possible to distinguish between the two, either because of poor resolution on air-photos or inconclusive evidence in the field.

deep-seated failure. Landslide involving deep regolith, weathered rock, and/or bedrock, as well as surficial (pedogenic) soil. As used here, deep-seated landslides commonly include large (acres to hundreds of acres) slope features, associated with geologic materials and structures. ***In watershed analysis, they are divided into:***

large-persistent deep-seated failures, commonly slump-earthflows involving large areas of hillside; found in natural and managed landscapes, recognizable over long periods of time, and almost without exception predate land use;

small-sporadic deep-seated failures, commonly smaller slumps that can be triggered at irregular time intervals (by storms or earth movement), and can decay to the point where they are indiscernible.

Because movement of deep-seated failures is hydrologically controlled (at least in part), land use can influence movement in suitable situations.

deliverability. Likelihood that, as a result of one or more forest practices or by cumulative effects, a material amount of wood, water, sediment, or energy will be delivered to fish habitat, streams, or capital improvements; three conditions must all be satisfied: 1) an impact is likely to occur; 2) the magnitude or size of the impact is sufficient to have a significant effect on the resource characteristic(s); and 3) the impact is likely to be delivered to a stream segment with a vulnerable resource.

delivered hazard, or potential impact. Adverse change in the amount or location of wood, water, sediment, or energy being delivered to fish, water quality, or capital improvements.

dry ravel. Downslope movement of dry, noncohesive soil or rock particles under the influence of gravity; a form of soil creep.

earthflow. Deep-seated landslide of broken soil and rock, dominantly by slow flow; produces linear areas of hummocky, disjointed terrain. Earthflow activity is favored in deep, cohesive soil, clay-rich bedrock, or slumped material, and is largely controlled by seasonal (or longer) fluctuations of pore-water pressure.

erosion. The removal of rock and soil from the land surface, by a variety of processes: by gravitational stress, through mass wasting; or by the movement of a medium (e.g. water, in solution or by overland or channel flow).

flood-frequency curve. Graph showing the relationship between recurrence interval (or exceedance probability) and peak discharge (volume flux of water per unit time).

geomorphic processes. Landscape-modifying processes such as erosion, mass-wasting, and stream flow.

GIS. A computerized geographic information system.

gully erosion, gullying. Advanced stage of surface erosion in which rills, carved by channelization of overland flow, coalesce into larger channels in soil or soft rock.

habitat value. Characteristic of the environment in which an organism (e.g., fish) lives.

hydrologic maturity. Condition of a forest stand in which hydrologic processes operate as they do in a mature or old-growth forest. In particular, snow accumulation is typically lower in thick, dense forest (at middle and lower elevations) than in openings, due to interstorm melt of snow caught in the canopy; and snowmelt is slower, due to decreased wind-aided flux of sensible and latent heat.

indicator area. Particular area or stream reach, adopted as representative of a response segment.

input variable. Amount of sediment (coarse and fine), water, wood, and/or energy delivered to a stream segment.

landslide. Any mass-movement process characterized by downslope transport of soil and rock, under gravitational stress, by sliding over a discrete failure surface; or the resultant landform. In common usage, can also include other forms of mass wasting not involving sliding (rockfall, etc.)

LWD recruitment. Large woody debris delivered by the fall of streamside trees, or delivery from upstream sources by stream transport.

mass wasting. General term for the dislodgement and downslope transport of soil and rock under the direct application of gravitational stress (i.e., without major action of water, wind, or ice); mass movement. In watershed analysis, this class of erosion processes is divided into three categories: shallow-rapid landslides, deep-seated failures, and debris torrents (see definitions).

mass-wasting map unit (MWMU). Landscape element for application of hazard ratings, defined in the mass-wasting assessment module. MWMUs are delineated on the basis of physical (geologic, climatic, etc.) characteristics, susceptibility to mass-erosion processes, sensitivity to forest practices, and potential for delivery of sediment to public resources.

peak flow event. Maximum instantaneous stream discharge during runoff, commonly caused by an individual rainstorm, rain-on-snow, or spring snow-melt.

rain-on-snow zone. Area (generally defined as an elevation zone) where it is common for snowpacks to be partially or completely melted during rainstorms several times during the winter.

resource characteristic. specific, measurable characteristic of fish, water, and capital improvements of the state or its political subdivisions:

For fish and water -

physical fish habitat, including temperature and turbidity;

turbidity in hatchery water supplies;

turbidity and volume for areas of water supply;

For [public] capital improvements:

physical or structural integrity.

(From WAC 222-16-010.)

resource vulnerability. Likelihood of material adverse effects on resource characteristics. Criteria may include (but are not limited to) current resource conditions.

response segment. Location (segment) of the stream channel that is susceptible to changes in inputs of wood, water, energy, and/or sediment.

rill erosion. Development of many closely-spaced channels, caused by the removal of soil by concentrated overland flow; a form of surface erosion, intermediate between sheet erosion and gullying.

riparian function. Activity relating to the LOD-recruitment and stream-shading functions provided by riparian vegetation.

riparian zone. Area surrounding a stream, in which ecosystem processes are within the influence of stream processes.

sediment budget. Accounting of the sources, movement, storage, and disposition of sediment produced by a variety of erosion processes, from its origin to its exit from a basin; includes sediment types, amounts, and routing to specific locations of analysis.

shallow-rapid landslide. Landslide produced by failure of the soil mantle (typically to a depth of one or two meters, sometimes including glacial till and some weathered bedrock), on a steep slope; includes debris slides, soil slips, and failures of road cut-slopes and sidecast. The debris moves quickly (commonly breaking up and developing into a debris flow), leaving an elongate, spoon-shaped scar.

sheet erosion. Removal (more or less evenly) of surface material from sloping land, by the action of broad sheets of overland flow; a form of surface erosion.

slump. Deep, rotational landslide, generally producing coherent movement (back-rotation) of blocks over a concave failure surface. Typically, slumps are triggered by the buildup of pore-water pressure in mechanically weak materials (deep soil or clay-rich rock).

slump-earthflow. Landslide exhibiting characteristics of both slumps and earthflows: typically the upper part moves by slump (rotation of blocks), while the lower portion moves by flow (hummocky terrain). For purposes of hazard assessment, discrimination between slumps and earthflows is preferred, if possible and appropriate.

snow-water equivalent (SWE). Amount of liquid water (expressed as depth) derived by melting a snowpack.

surface erosion. Movement of soil particles down or across a slope, as a result of exposure to gravity and a moving medium such as rain or wind. The transport of sediment depends on the steepness of the slope, the texture and cohesion of the soil particles, the activity of rainsplash, sheetwash, gullying, and dry ravel processes, and the presence of buffers.

transport capacity. Ability of the flow to carry the sediment delivered to the stream; indicated by the stream power.

watershed administrative unit (WAU). Basic geographic unit for watershed analysis. An area shown on the map specified in WAC 222-22-020(1) (WAC 222-16-010).

watershed analysis. For a given WAU, the assessment completed under WAC 222-22-050 or 222-22-060, together with the prescriptions selected under WAC 222-22-070, including assessments completed under WAC 222-22-050 where there are no areas of resource sensitivity (WAC 222-16-010).

